Appl. No. : **Unknown**
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AMENDMENTS TO THE CLAIMS

WHAT IS CLAIMED IS:

1. (Currently Amended) ~~Method~~ A method ~~for characterizing~~ of characterizing an optical ~~fibre~~ fiber link by its beat length, coupling length and ~~polarization~~ polarization mode dispersion distribution, comprising ~~the steps of~~ :

sending a pulsed signal along said optical ~~fibre~~ fiber link and measuring the backscattered signal, after passing through a ~~polariser~~ polarizer,

deriving the length of said optical ~~fibre~~ fiber, the average power difference between two successive minima of said backscattered signal and the number of maxima per unit length,

in an iterative way determining a beat length interval and an interval for the ~~polarisation~~ polarization mode coupling parameter, until the length of said intervals is below a predetermined value, yielding a value for the beat length and the coupling length,

calculating the ~~polarisation~~ polarization mode dispersion.

2. (Currently Amended) The method as in claim 1, wherein said backscattered signal is a polarization-optical time domain reflectometry (POTDR) signal.

3. (Original) The method as in claim 2, wherein said POTDR signal is an ideal POTDR signal.

4. (Original) The method as in claim 2, wherein said POTDR signal is the convolution of an ideal POTDR signal and a signal depending on the pulse shape.

5. (Original) The method as in claim 4, wherein said POTDR signal further is convoluted with a signal taking into account the effect of time jitter.

6. (Currently Amended) The method as in ~~any of claims 2 to 5~~ claim 2, wherein a smoothing algorithm is applied to said POTDR signal.

7. (Currently Amended) ~~Method for~~A method of ~~characterising~~ characterizing an optical link ~~consisting of~~ comprising a concatenation of several ~~fibres~~ fibers, ~~by applying the method as in any of the previous claims to each fibre~~ comprising determining for each fiber of

said link a beat length, coupling length and polarization mode dispersion distribution, wherein said determining comprises:

sending a pulsed signal along the fiber in said optical fiber link and measuring the backscattered signal, after passing through a polarizer,

deriving the length of said optical fiber, the average power difference between two successive minima of said backscattered signal and the number of maxima per unit length,

in an iterative way determining a beat length interval and an interval for the polarization mode coupling parameter, until the length of said intervals is below a predetermined value, yielding a value for the beat length and the coupling length, and

calculating the polarization mode dispersion.

8. (Currently Amended) ~~Use of method as in any of the previous claims to locate the position of polarisation mode dispersion sources within an optical fibre link.~~ The method as in claim 7, wherein said backscattered signal is a polarization-optical time domain reflectometry (POTDR) signal.

9. (Currently Amended) ~~Use of method as in any of the claims 1 to 8 in telecommunication networks~~The method as in claim 8, wherein said POTDR signal is an ideal POTDR signal.

10. (Currently Amended) ~~Use of method as in any of the claims 1 to 8 in fibre sensing applications~~The method as in claim 8, wherein said POTDR signal is the convolution of an ideal POTDR signal and a signal depending on the pulse shape.

11. (New) The method as in claim 10, wherein said POTDR signal further is convoluted with a signal taking into account the effect of time jitter.

12. (New) The method as in claim 8, wherein a smoothing algorithm is applied to said POTDR signal.

13. (New) A method of locating the position of polarization mode dispersion sources within an optical fiber link by characterizing said optical fiber link by its beat length, coupling length and polarization mode dispersion distribution, wherein said characterizing comprises:

sending a pulsed signal along said optical fiber link and measuring the backscattered signal, after passing through a polarizer,

deriving the length of said optical fiber, the average power difference between two successive minima of said backscattered signal and the number of maxima per unit length,

in an iterative way determining a beat length interval and an interval for the polarization mode coupling parameter, until the length of said intervals is below a predetermined value, yielding a value for the beat length and the coupling length,

calculating the polarization mode dispersion.

14. (New) The method as in claim 1, wherein said optical fiber link is a telecommunication network optical fiber link.

15. (New) The method as in claim 7, wherein said optical fiber link is a telecommunication network optical fiber link.

16. (New) The method as in claim 13, wherein said optical fiber link is a telecommunication network optical fiber link.

17. (New) A method of characterizing an optical fiber link in a fiber sensing application by its beat length, coupling length and polarization mode dispersion distribution, comprising:

sending a pulsed signal along said optical fiber link and measuring the backscattered signal, after passing through a polarizer,

deriving the length of said optical fiber, the average power difference between two successive minima of said backscattered signal and the number of maxima per unit length,

in an iterative way determining a beat length interval and an interval for the polarization mode coupling parameter, until the length of said intervals is below a predetermined value, yielding a value for the beat length and the coupling length,

calculating the polarization mode dispersion.

18. (New) A method of locating the position of polarization mode dispersion sources within an optical fiber link in a fiber sensing application by characterizing said optical fiber link

by its beat length, coupling length and polarization mode dispersion distribution, wherein said characterizing comprises :

sending a pulsed signal along said optical fiber link and measuring the backscattered signal, after passing through a polarizer,

deriving the length of said optical fiber, the average power difference between two successive minima of said backscattered signal and the number of maxima per unit length,

in an iterative way determining a beat length interval and an interval for the polarization mode coupling parameter, until the length of said intervals is below a predetermined value, yielding a value for the beat length and the coupling length,

calculating the polarization mode dispersion.